We claim

1. Recombinant laminin 5-expressing cells.

2. The recombinant laminin 5-expressing cells of claim 1, wherein the cells express recombinant laminin 5 comprising:

a first chain comprising a polypeptide that is substantially similar to an α3 laminin chain;

a second chain comprising a polypeptide that is substantially similar to a β3 laminin chain; and

a third chain comprising a polypeptide that is substantially similar to a γ2 laminin chain;

wherein the first, second, and third chains are assembled into recombinant heterotrimeric laminin 5.

3. The recombinant laminin 5-expressing cells of claim 1, wherein the cells express recombinant laminin 5 comprising:

a first chain comprising a recombinant polypeptide that is at least 70% identical to one or more of SEQ ID NO:2, 4, 6, 8, 10,12, or fragments thereof;

a second chain comprising a recombinant polypeptide that is at least 70% identical to one or more of SEQ ID NO:14, 16, 18, 20, 22, 24, or fragments thereof; and

a third chain comprising a recombinant polypeptide that is at least 70% identical to one or more of SEQ ID NO:26, 28, 30, 32, 34, 36, or fragments thereof;

wherein the cell expresses the first, second, and third chains, and wherein the first, second, and third chains assemble into recombinant heterotrimeric laminin 5 that is secreted into the media by the cultured cell.

4. The recombinant laminin 5-expressing cells of claim 1, wherein the cells express recombinant laminin 5 comprising:

a first chain encoded by a polynucleotide that hybridizes under high stringency conditions to a coding region of one or more of SEQ ID NO:1, 3, 5, 7, 9, 11, or fragments

thereof;

a second chain encoded by a polynucleotide that hybridizes under high stringency conditions to a coding region of one or more of SEQ ID NO:13, 15, 17, 19, 21, 23, or fragments thereof; and

a third chain encoded by a polynucleotide that hybridizes under high stringency conditions to a coding region of one or more of SEQ ID NO: 25, 27, 29, 31, 33, 35, or fragments thereof;

wherein the cell expresses the first, second, and third chains, and wherein the first, second, and third chains assemble into recombinant heterotrimeric laminin 5 that is secreted into the media by the cultured cell.

5. The recombinant laminin 5-expressing host cells of claim 1, wherein the cells express recombinant laminin 5 comprising a first, second, and third polypeptide chain, wherein the first, second, and third polypeptide chains each comprise a general structure selected from the group consisting of: (1) R1-R2-R3; (2) R1-R2-R3(e); (3) R3; (4) R3(e); (5) R1-R3; (6) R1-R3(e); (7) R2-R3; and (8) R2-R3(e)

wherein R1 is a amino terminal methionine; R2 is a signal sequence that is capable of directing secretion of the polypeptide, wherein the signal sequence may be the natural signal sequence for the particular laminin chain, that of another secreted protein, or it may be an artificial sequence; R3 is a secreted $\alpha 3$ laminin chain for the first polypeptide chain, a secreted $\beta 3$ laminin chain for the second polypeptide chain, and $\gamma 2$ laminin chain for the third polypeptide chain; and R3(e) is identical to R3, but further comprises an epitope tag .

6. A method of purifying recombinant laminin 5, comprising:

a. providing the eukaryotic cells of any one of claim 1-5;

b. growing the cells in cell culture medium under conditions to stimulate expression of the recombinant laminin 5 chains;

c. passing the cell culture medium through an affinity chromatography column, wherein the column contains a compound that specifically binds to the epitope tag;

d. washing the affinity column to remove unbound materials; and

e. eluting the bound recombinant laminin 5 from the column.

7. Purified recombinant laminin 5 isolated according to the method of claim 6.

8. Purified recombinant laminin 5.

9. The substantially purified recombinant laminin 5 of claim 8 comprising:

a first chain comprising a polypeptide that is substantially similar to an α3 laminin chain;

a second chain comprising a polypeptide that is substantially similar to a β3 laminin chain; and

a third chain comprising a polypeptide that is substantially similar to a γ2 laminin chain;

wherein the first, second, and third chains are assembled into recombinant heterotrimeric laminin 5.

10. The purified recombinant laminin 5 of claim 8, comprising:

a first chain comprising a recombinant polypeptide that is at least 70% identical to one or more of SEQ ID NO:2, 4, 6, 8, 10, 12, or fragments thereof;

a second chain comprising a recombinant polypeptide that is at least 70% identical to one or more of SEQ ID NO:14, 16, 18, 20, 22, 24, or fragments thereof; and

a third chain comprising a recombinant polypeptide that is at least 70% identical to one or more of SEQ ID NO:26, 28, 30, 32, 34, 36, or fragments thereof;

wherein the first, second, and third chains are assembled into recombinant heterotrimeric laminin 5.

11. The purified recombinant laminin 5 of claim 8, comprising:

a first chain encoded by a polynucleotide that hybridizes under high stringency conditions to a coding region of one or more of SEQ ID NO:1, 3, 5, 7, 9, 11, or fragments thereof;

a second chain encoded by a polynucleotide that hybridizes under high stringency

conditions to a coding region of one or more of SEQ ID NO:13, 15, 17, 19, 21, 23, or fragments thereof; and

a third chain encoded by a polynucleotide that hybridizes under high stringency conditions to a coding region of SEQ ID NO: 25, 27, 29, 31, 33, 35, or fragments thereof;

wherein the first, second, and third chains are assembled into recombinant heterotrimeric laminin 5.

12. The purified recombinant heterotrimeric laminin 5 of claim 8, comprising a first, second, and third polypeptide chain, wherein the first, second, and third polypeptide chains each comprise a general structure selected from the group consisting of: (1) R1-R2-R3; (2) R1-R2-R3(e); (3) R3; (4) R3(e); (5) R1-R3; (6) R1-R3(e); (7) R2-R3; and (8) R2-R3(e)

wherein R1 is a amino terminal methionine; R2 is a signal sequence that is capable of directing secretion of the polypeptide, wherein the signal sequence may be the natural signal sequence for the particular laminin chain, that of another secreted protein, or it may be an artificial sequence; R3 is a secreted $\alpha 3$ laminin chain for the first polypeptide chain, a secreted $\beta 3$ laminin chain for the second polypeptide chain, and a secreted $\gamma 2$ laminin chain for the third polypeptide chain; and R3(e) is identical to R3, but further comprises an epitope tag.

13. A pharmaceutical composition comprising:

a. the recombinant laminin 5 of any of claims 7-12; and

b. a pharmaceutically acceptable carrier.

14. A method for accelerating wound healing comprising administering to a patient in need thereof an amount effective of the recombinant laminin 5 of any of claims 7-12 to accelerate wound healing.

15. The method of claim 14 wherein the wound is selected from the group consisting of diabetic foot ulcers, venous ulcers, pressure sores, skin surgery, burns, acute wounds, skin grafts, corneal ulcerations, gastro-intestinal ulcers, periodontitis, and gingivitis.

16. A method to improve the biocompatibility of a medical device, comprising contacting the medical device with an amount effective of the recombinant laminin 5 of any of claims 7-12 to improve the biocompatibility of the medical device.

17. A method to promote cell adhesion to a surface, comprising contacting the cells with an amount effective of the recombinant laminin 5 of any of claims 7-12 to promote cell adhesion to a surface.

18. An improved method for the ex vivo treatment of Type I diabetes in a patient in need thereof, wherein the improvement consists of culturing isolated pancreatic islet beta in the presence of an amount effective the recombinant laminin 5 of any of claims 7-12 to promote adhesion of the pancreatic islet beta cells to a surface, culturing the cells, and re-introducing the cells into the patient.

19. A method for regulating angiogenesis, comprising contacting a tissue in need thereof with an amount effective to promote angiogenesis of laminin 5 to regulate angiogenesis.

20. The method of claim 19, wherein the laminin 5 comprises recombinant laminin 5 according to any one of claims 7-12.

21. An improved cell growth substrate, wherein the improvement consists of providing a cell growth substrate that has been coated with an amount effective of the recombinant laminin 5 of any of claims 7-12 to promote cell attachment to the cell growth substrate.

22. An improved cell culture medium, wherein the improvement consists of providing an amount effective of the recombinant laminin 5 of any of claims 7-12 to promote cell attachment to a cell growth substrate.

23. An improved medical implantation device, wherein the improvement consists of providing a medical implantation device that has been coated with an amount effective of the

recombinant laminin 5 of any of claims 7-12 to promote cell attachment to the medical implantation device.

24. The improved medical implantation device of claim 23, wherein the medical implantation device is selected from the group consisting of artificial grafts, indwelling or transcutaneous catheter, polytetrafluoroethylene, expanded polytetrafluoroethylene, needle, metal pin, metal rod, colostomy tube, transcutaneous catheter, dental abutment piece or surgical mesh.

25. A method for accelerating wound healing comprising administering to a patient in need thereof an amount effective of the pharmaceutical composition of claim 13 to accelerate wound healing.

26. The method of claim 25 wherein the wound is selected from the group consisting of diabetic foot ulcers, venous ulcers, pressure sores, skin surgery, burns, acute wounds, skin grafts, corneal ulcerations, gastro-intestinal ulcers, periodontitis, and gingivitis.

27. A method to improve the biocompatibility of a medical device, comprising contacting the medical device with an amount effective of the pharmaceutical composition of claim 13 to improve the biocompatibility of the medical device.

28. A method to promote cell adhesion to a surface, comprising contacting the cells with an amount effective of the pharmaceutical composition of claim 13 to promote cell adhesion to a surface.

29. An improved method for the ex vivo treatment of Type I diabetes in a patient in need thereof, wherein the improvement consists of culturing isolated pancreatic islet beta in the presence of an amount effective the pharmaceutical composition of claim 13 to promote adhesion of the pancreatic islet beta cells to a surface, culturing the cells, and re-introducing the cells into the patient.

30. A method for regulating angiogenesis, comprising contacting a tissue in need thereof with an amount effective to regulate angiogenesis of the pharmaceutical composition of claim 13 to regulate angiogenesis.

31. An improved cell growth substrate, wherein the improvement consists of providing a cell growth substrate that has been coated with an amount effective of the pharmaceutical composition of claim 13 to promote cell attachment to the cell growth substrate.

32. An improved medical implantation device, wherein the improvement consists of providing a medical implantation device that has been coated with an amount effective of the pharmaceutical composition of claim 13 to promote cell attachment to the medical implantation device.

33. The improved medical implantation device of claim 32, wherein the medical implantation device is selected from the group consisting of artificial grafts, indwelling or transcutaneous catheter, polytetrafluoroethylene, expanded polytetrafluoroethylene, needle, metal pin, metal rod, colostomy tube, transcutaneous catheter, dental abutment piece or surgical mesh.

34. An isolated polynucleotide sequence selected from the group consisting of SEQ ID 21, SEQ ID NO:23, SEQ ID NO:29, SEQ ID NO:31.

35. An isolated polypeptide sequence selected from the group consisting of SEQ ID NO:22, SEQ ID NO:24, SEQ ID NO:30, and SEQ ID NO:32.